

$$h = \frac{3}{8}d$$

$$d = 2r$$

$$h = \frac{3}{8}(2r)$$

$$h = \frac{3}{4}r$$

$$r = \frac{4}{3}h$$

$$V = \frac{1}{3}\pi r^2 h$$

$$V = \frac{1}{3}\pi \left(\frac{4}{3}h\right)^2 h$$

$$V = \frac{1}{3}\pi \cdot \frac{16}{9}h^2 \cdot h$$

$$V = \frac{16}{27}\pi h^3$$